WHAT IS CLAIMED IS:

1   1. A method comprising:

2   copying a unit of data in a copy data write operation from a source volume of a first

3 organization type to a destination volume of a second organization type;

4   writing a progress indicator in a progress indicator data write operation to an area of said

5 destination volume indicating the successful copying of at least said unit of data;

6   copying a plurality of additional units of data in a plurality of additional copy data write

7 operations from said source volume to said destination volume; and

8   writing an additional progress indicator in an additional progress indicator data write

9 operation to said area of said destination volume indicating the successful copying of at least said

10 plurality of units of data wherein the number of progress indicator data write operations is less

11 than the number of copy data write operations.

1   2. The method of claim 1 wherein said second organization type is a Redundant Array of

2 Independent Disks organization.

1   3. The method of claim 2 wherein said unit of data is a stripe of data written across an

2 array of disks of said Redundant Array of Independent Disks organization.

1   4. The method of claim 3 further comprising:

2   copying an additional unit of data in an additional copy data write operation from said

3 source volume to said destination volume;

4   testing for the presence of at least one condition of a defined set of conditions; and

5   writing an additional progress indicator in connection with said copying an addition unit

6 of data when any one condition of said defined set of conditions is present.

1   5. The method of claim 4 wherein said testing tests for the presence of each condition of

2 said defined set of conditions, the method further comprising:

3   bypassing the writing of an additional progress indicator in connection with said copying

4 an addition unit of data when each condition of said defined set of conditions is absent.

1   6. The method of claim 4 wherein source volume and said destination volume include a

2 common disk drive.

1   7. The method of claim 6 wherein said defined set of conditions includes the condition of

2 the destination location within the destination volume for a particular unit of data overlaps with

3 the source location within the source volume for the particular unit of data.

1   8. The method of claim 6 wherein said defined set of conditions includes the condition of

2 the expiration of a predetermined time period since the last progress indicator data write

3 operation.

1   9. The method of claim 6 wherein said defined set of conditions includes the condition of

2 the count of copy data write operations since the last progress indicator data write operation

3 exceeding a predetermined count.

1   10. The method of claim 6 wherein said defined set of conditions includes the condition

2 of a host issuing a write request to a location containing a particular unit of data copied to the

3 destination volume and the last progress indicator written to the area of the destination volume

4 lacks an indication that the particular unit of data has been successfully copied to the destination

5 volume.

1   11. The method of claim 6 wherein said units of data are copied to the destination

2 volume in address sequential order and the defined set of conditions includes the condition of a

3 unit of data in the sequence to be copied having a destination location within the destination

4 volume, which overlaps with a portion of the source location within the source volume containing

5 units of data copied and the last progress indicator lacks an indication that the units of data of the

6 source volume portion have been successfully copied to the destination volume.

1   12. The method of claim 2 wherein said area of said destination volume is a Redundant

2 Array of Independent Disks organization configuration area.

1   13 An article comprising a storage medium, the storage medium comprising machine

2 readable instructions stored thereon to:

3   copy a unit of data in a copy data write operation from a source volume of a first

4 organization type to a destination volume of a second organization type;

5   write a progress indicator in a progress indicator data write operation to an area of said

6 destination volume indicating the successful copying of at least said unit of data;

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7   copy a plurality of additional units of data in a plurality of additional copy data write

8   operations from said source volume to said destination volume; and

9   write an additional progress indicator in an additional progress indicator data write

10   operation to said area of said destination volume indicating the successful copying of at least said

11   plurality of units of data wherein the number of progress indicator data write operations is less

12   than the number of copy data write operations.

1   14. The article of claim 13 wherein said second organization type is a Redundant Array

2   of Independent Disks organization.

1   15. The article of claim 14 wherein said unit of data is a stripe of data written across an

2   array of disks of said Redundant Array of Independent Disks organization.

1   16. The article of claim 15 wherein the storage medium further comprises machine

2   readable instructions stored thereon to:

3   copy an additional unit of data in an additional copy data write operation from said

4   source volume to said destination volume;

5   test for the presence of at least one condition of a defined set of conditions; and

6   write an additional progress indicator in connection with said copying an addition unit of

7   data when any one condition of said defined set of conditions is present.

1   17. The article of claim 16 wherein the machine readable instructions to test include

2   machine readable instructions stored on the storage medium to test for the presence of each

3   condition of said defined set of conditions, and wherein the storage medium further comprises

4   machine readable instructions stored thereon to:

5   bypass the writing of an additional progress indicator in connection with said copying an

6   addition unit of data when each condition of said defined set of conditions is absent.

1   18. The article of claim 16 wherein source volume and said destination volume include a

2   common disk drive.

1   19. The article of claim 18 wherein said defined set of conditions includes the condition

2   of the destination location within the destination volume for a particular unit of data overlaps with

3   the source location within the source volume for the particular unit of data.

1   20. The article of claim 18 wherein said defined set of conditions includes the condition

2   of the expiration of a predetermined time period since the last progress indicator data write

3   operation.

1   21. The article of claim 18 wherein said defined set of conditions includes the condition

2   of the count of copy data write operations since the last progress indicator data write operation

3   exceeding a predetermined count.

1   22. The article of claim 18 wherein said defined set of conditions includes the condition

2   of a host issuing a write request to a location containing a particular unit of data copied to the

3   destination volume and the last progress indicator written to the area of the destination volume

4   lacks an indication that the particular unit of data has been successfully copied to the destination

5   volume.

1   23. The article of claim 18 wherein said units of data are copied to the destination

2   volume in address sequential order and the defined set of conditions includes the condition of a

3   unit of data in the sequence to be copied having a destination location within the destination

4   volume, which overlaps with a portion of the source location within the source volume containing

5   units of data copied and the last progress indicator lacks an indication that the units of data of the

6   source volume portion have been successfully copied to the destination volume.

1   24. The article of claim 14 wherein said area of said destination volume is a Redundant

2   Array of Independent Disks organization configuration area.

1   25. A system, comprising:

2   at least one memory which includes an operating system and an application;

3   a processor coupled to the memory;

4   data storage which includes a destination volume and a source volume containing

5   units of data;

6   a data storage controller for managing Input/Output (I/O) access to the data

7   storage; and

8   a device driver executable by the processor in the memory, wherein at least one

9   of the application, operating system, and device driver is adapted to:

10   copy a unit of data in a copy data write operation from a source volume of a first

11   organization type to a destination volume of a second organization type;

12   write a progress indicator in a progress indicator data write operation to an area

13   of said destination volume indicating the successful copying of at least said unit of data;

14   copy a plurality of additional units of data in a plurality of additional copy data

15   write operations from said source volume to said destination volume; and

16   write an additional progress indicator in an additional progress indicator data

17   write operation to said area of said destination volume indicating the successful copying

18   of at least said plurality of units of data wherein the number of progress indicator data

19   write operations is less than the number of copy data write operations.

1   26. The system of claim 25 wherein said second organization type is a Redundant Array

2   of Independent Disks organization.

1   27. The system of claim 26 wherein said storage includes an array of storage disks

2   organized in said Redundant Array of Independent Disks organization and a unit of data is a

3   stripe of data written across said array of disks of said Redundant Array of Independent Disks

4   organization.

1   28. The system of claim 27 at least one of the application, operating system, and device

2   driver is further adapted to:

3   copy an additional unit of data in an additional copy data write operation from said

4   source volume to said destination volume;

5   test for the presence of at least one condition of a defined set of conditions; and

6   write an additional progress indicator in connection with said copying an addition unit of

7   data when any one condition of said defined set of conditions is present.

1   29. The system of claim 28 wherein said testing tests for the presence of each condition

2   of said defined set of conditions, and at least one of the application, operating system, and device

3   driver is further adapted to:

4   bypass the writing of an additional progress indicator in connection with said copying an

5   addition unit of data when each condition of said defined set of conditions is absent.

1   30. The system of claim 28 wherein source volume and said destination volume include

2   a common disk drive.

1   31. The system of claim 30 wherein said defined set of conditions includes the condition

2   of the destination location within the destination volume for a particular unit of data overlaps with

3   the source location within the source volume for the particular unit of data.

1   32. The system of claim 30 wherein said defined set of conditions includes the condition

2   of the expiration of a predetermined time period since the last progress indicator data write

3   operation.

1   33. The system of claim 30 wherein said defined set of conditions includes the condition

2   of the count of copy data write operations since the last progress indicator data write operation

3   exceeding a predetermined count.

1   34. The system of claim 30 wherein said defined set of conditions includes the condition

2   of a host issuing a write request to a location containing a particular unit of data copied to the

3   destination volume and the last progress indicator written to the area of the destination volume

4   lacks an indication that the particular unit of data has been successfully copied to the destination

5   volume.

1   35. The system of claim 30 wherein said units of data are copied to the destination

2   volume in address sequential order and the defined set of conditions includes the condition of a

3   unit of data in the sequence to be copied having a destination location within the destination

4   volume, which overlaps with a portion of the source location within the source volume containing

5   units of data copied and the last progress indicator lacks an indication that the units of data of the

6   source volume portion have been successfully copied to the destination volume.

1   36. The system of claim 26 wherein said area of said destination volume is a Redundant

2   Array of Independent Disks organization configuration area.

1   37. The system of claim 25 further comprising a video controller coupled to said

2   processor.

1   38. A device for use with a data storage which includes a destination volume and a source

2   volume containing units of data, comprising:

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3   means for copying a unit of data in a copy data write operation from a source volume of a

4 first organization type to a destination volume of a second organization type; and

5   means for writing a progress indicator in a progress indicator data write operation to an

6 area of said destination volume indicating the successful copying of at least said unit of data;

7   wherein the copying means includes means for copying a plurality of additional units of

8 data in a plurality of additional copy data write operations from said source volume to said

9 destination volume; and

10   wherein the writing means includes means for writing an additional progress indicator in

11 an additional progress indicator data write operation to said area of said destination volume

12 indicating the successful copying of at least said plurality of units of data wherein the number of

13 progress indicator data write operations is less than the number of copy data write operations.

1   39. The device of claim 38 wherein said storage includes an array of storage disks

2 organized in a Redundant Array of Independent Disks organization and a unit of data is a stripe of

3 data written across said array of disks of said Redundant Array of Independent Disks

4 organization.

1   40. The device of claim 38 wherein:

2   the copying means includes means for copying an additional unit of data in an additional

3 copy data write operation from said source volume to said destination volume;

4   the device further includes testing means for testing for the presence of at least one

5 condition of a defined set of conditions; and

6   the writing means includes means for writing an additional progress indicator in

7 connection with said copying an addition unit of data when any one condition of said defined set

8 of conditions is present.